1992

Indonesia paper
? Update
version

FARMER FIRST: THE PROFESSIONAL REVOLUTION

Paper for the International Seminar on Livestock Services for Smallholders,
Yogyakarta, Indonesia, November 15-20 1992

Robert Chambers

INDONESIA PAPER

Contents

Abstract

Rapid change, past error, and the complex, diverse and risk-prone (CDR) farming systems of most smallholders combine to challenge normal agricultural professionalism and bureaucracy. The transfer-of-technology (TOT) mode which has served industrial and green revolution agriculture misfits CDR farming conditions. The challenge is to reverse biases and practices of normal professionalism, of top-down bureaucracy and of TOT. A farmer-first (FF) approach puts first the knowledge, priorities and analysis of farmers and herders, especially those who are resource-poor. It seeks to enable them to gain sustainable livelihoods, often by complicating and diversifying their farming and livelihood systems, and reducing their risks. Multiple purpose livestock, with their linkages with other elements in farming and livelihood systems, have a special part to play. Practical implications include decentralisation, participatory research, and changes in the behaviour and attitudes of outsiders. Three questions stand out: whose reality counts - ours, or theirs?; who gains and who loses?; and how can professionals change?

Rapid Change

We live in a period of rapid, often accelerating, change. This applies not only to ecological, social and economic conditions, but also more pointedly to professionalism. Shifts are taking place in all the major professions concerned with rural development. This is exciting, even exhilarating. But for all of us, there is also a sense in which we are threatened and suffer, because so often the professional training we have received proves a handicap. At training college and university we thought we were being taught approaches and methods which would last us for life. But now we find not just knowledge changing, but also professional norms, methods and roles. So scientists in agriculture, animal husbandry and veterinary services are now called upon to do things they were not originally trained to do. This makes the challenge, and the opportunity, not just professional, but also personal, applying to all of us - to unlearn old beliefs, attitudes, behaviours and methods, to learn new ones, and continuously to adapt to change.

Past Error

It is striking, and humbling first, how often in the past we have been wrong while so sure we were right, in policy, practice and beliefs, and in both the social and natural sciences; and second, how often the provision of services has failed the poorer and weaker among farmers and herders.

First, concerning error, although much has been achieved, the history of development also presents a sobering catalogue of mistaken belief and action. In agriculture, one has been the widespread conviction, still repeated, that post-harvest losses of grain at the village level are of the order of 30 per cent, when again and again when careful research has been conducted, the losses have been found to be only of the order of 4 to 8 per cent. Much research has been misplaced: a specific example (pers. comm. David Lyon) is 10 years' research in northern Nigeria based on planting cotton at the time optimal for yields - the start of the rains, when farmers would only plant later, when they had put in their food crops. Another example was our ignorant advocacy of heavy pesticide applications, compared with the more sensitive, cheaper and effective approaches of integrated pest management which are reported to be so successful now in Indonesia and elsewhere. And many other examples could be added.

Concerning livestock, the tragic history of misguided grazing and ranching schemes and projects in Sub-Saharan Africa stands out as remarkable for its scale and for sustained error. Livestock-related technology provides another revealing case in the form of animal-drawn wheeled toolcarriers in Africa, Asia and Latin America. Starkey (1988:10) reported that about 10,000 wheeled toolcarriers of over 45 different designs had been made, but their use by farmers had been negligible. Farmer rejection had been apparent since the early 1960s, "yet as recently as 1986 the majority of researchers, agriculturalists, planners and decision makers in national programmes, aid agencies and international centres were under the impression that wheeled toolcarriers were a highly successful technology". He concludes that "The wheeled toolcarrier story is remarkable, for the implements have been universally "successful" yet never adopted by farmers." Farmers rejected them because of high cost, heavy weight, lack of manoeuvrability, inconvenience in operation, complication of adjustment, and difficulty in changing between modes. What worked in the privileged and special conditions of the research station, according to the criteria of scientists and engineers, did not work in actual farming conditions, according to the criteria of farmers. The astonishing and sobering aspect of this tragic story of wasted resources and talent is "our" sustained failure to recognise and embrace error, our failure to listen to and learn from farmers. More generally, only a small proportion of agricultural research leads to technology which is adopted by farmers. There is something to be explained; and to explain it we have to examine ourselves, our knowledge, conditions, aims and methods, and smallholders and theirs.

Second, concerning contact and services, other pervasive error, across all disciplines and departments, has been the relative neglect of the poorer, more marginal and more remote farmers and others (Chambers 1983: 10-27). It is notorious that extension staff tend to have contact with and serve the larger, better off and more accessible farm families. Extension staff then overperceive those who adopt recommended technology, and underperceive those who do not: in Western Kenya in a random sample of farmers there was only a 50 per chance of finding an exotic grade cow, but a junior agricultural extension worker complained that his sample was biased because he did not find several. The better off farmers are more able to reciprocate for services rendered, with everything from cups of tea to political patronage and willingness to receive and impress important official visitors. At the extreme (pers. comm. David Leonard) the better off farmers receive veterinary services free, while the poorer have to pay.

Whose knowledge counts?

Recognition of our errors raises the question of the comparative advantages of our knowledge and farmers' knowledge. This is illustrated in Fig 1. The researcher's and the farmer's knowledge can be shown in a simple matrix (Fig 1a). If we, as scientists, look at ourselves, we will admit that the most acceptable position for us - the best for our egos and self-esteem - is box 1 - we know, and farmers do not know. Where farmers and scientists both know, and where they both do not know, we are on a more or less equal footing (although quite often we pretend we know when we do not know). The least acceptable to us has been box 4, where the farmers know and we do not know. And yet that is often the most crucial.

It is useful to consider our ideas of the relative sizes and content of these boxes. In the past we thought the boxes were as shown in Fig 1b: there was a lot that scientists knew and farmers did not, and there was a

bit that both knew, but there was not much that farmers knew which we did not. With growing wisdom, particularly through work with resource-poor farmers over the past 10 years, the size of these boxes in our professional consciousness has become more like Fig 1c. Of course, the relative sizes vary by context, by subject, and in other ways, but we recognise now that farmers know a great deal that we do not know, and that this knowledge is linked with practical management of the farming system.

Scientists' comparative competence and knowledge vis-a-vis farmers usually includes:

* minute and microscopic phenomena
* biotechnology
* processes where specialisation, reductionism and precision work well
* developing package technology for uniform and controlled conditions
* access to knowledge and genetic material from other environments

Farmers' comparative competence and knowledge vis-a-vis scientists usually includes:

* the experience and discipline of having to live in and survive through managing an actual farming and livelihood system
* continuous observation of visible processes
* the creation and exploitation of diverse microenvironments
* freedom to make progressive changes, managing and adapting sequences, unrestricted by rigid experimental design
* a long time horizon where rights to resources are secure
* development, adaptation and knowledge of technology for diverse local conditions, including internal linkages

A balance is needed. As Jeffery Bentley has written:

> "Anthropologists and sensitized agricultural scientists need to avoid romanticizing or sentimentalizing traditional farmers at the same time as they take their knowledge and opinions seriously"

To achieve balance, though, is not easy. The power and dominance of "our" knowledge systems are so great, that to take farmers' knowledge seriously enough requires a massive reversal.

Beyond technical knowledge, the farmer is the expert on what she or he wants. If technology and services are to fit and serve well, it is farmers' priorities and conditions which have to come first; but all too often it is the priorities and conditions of outsider professionals that dominate and determine what is done.

With hindsight now, past neglect of farmers' reality and priorities, as with the wheeled toolbars, can appear astoundingly arrogant and stupid. But past professionals deserve sympathetic understanding of how this came about; and understanding the reasons helps in the search for what should and could be done.

Normal Professionalism and the Transfer of Technology

Much of the explanation can be found in professional biases and specialisation, in normal professionalism and bureaucracy, and in behaviour and attitudes.

Professional biases are many. In the context of this Conference, they include preferences for animals which are large, exotic, capital-intensive, kept by the wealthier, linked to the wider market (through both inputs and outputs), well researched, and prominent in textbooks and courses. (In a classic example, Dolberg observes that in the undergraduate textbook, Animal Nutrition and Feeding Practices in India (Ranjhan 1980) only one and a half of the 322 pages are devoted to working animals, and half that space is given to horses which are only 1 per cent of the working animals in India (Dolberg 1982:115-117)). Much of this may have been corrected, but the obvious point has to be made that for poor rural people, it is often precisely the less prestigious small stock (goats, sheep, the much neglected donkey, hens, ducks, rabbits, guinea pigs, bees...) that are vital, to hedge against risk, reduce vulnerability, and provide savings, reserves to meet contingencies, and incomes and small change for transactions.

Professional biases are reinforced by specialisation. Specialisation in education and training is reinforced by specialisation in government departments. On visiting a farm, our focus of attention, the first thing we look at, is what concerns our particular discipline or department (figure 2). What we tend to miss are precisely the many linkages within the farming system on which the farmer is the expert, and which we undervalue. Crops are the concern of agronomists concerned primarily with grain yield, so the contribution of crops to livestock is described as crop "residues", or left-overs; but in many farming systems the stover is a vital source of fodder, sometimes valued more than the grain. Moreover, in complex, diverse and risk-prone conditions, in order to achieve a sustainable agriculture, farmers often try to complicate, diversify and strengthen precisely these internal linkages where our knowledge is weak and theirs is strong.

Normal professionalism is the dominant concepts, values, methods and behaviour in professions, and includes and sustains these biases and this specialisation. Normal professionalism is inculcated and taught in training institutes, colleges and universities, reinforced by bureaucracies and professional associations, and sustained by appointments boards and journal editors and their referees. Normal professionalism has awarded higher status to work in controlled conditions than in uncontrolled, and on research stations than with farmers. It is reductionist in its methods, and simplifies, controls and standardises.

The normal professionalism of agriculture operates in the transfer-of-technology (TOT) mode of research and extension. In this mode, scientists determine research priorities, conduct research in laboratories and on research stations, generate packages of technology which are successful according to their criteria, and then hand these over to Extension to transfer to farmers.

At this point normal bureaucracy takes over. Normal bureaucracy is hierarchical, with authority and power concentrated at the top, with headquarters located in central places, often capital cities. It tends to centralise and standardise. So in the TOT mode, extension recommendations are determined centrally, and then passed down the system as standard packages for Extension to transfer to farmers. Subsidies may be used to induce "adoption". It is the larger and better off farmers and herders who are contacted, and men rather than women. No one is rewarded if farmers

reject technology, and bad news is slow to pass back up the system. Normal bureaucracy is not good at learning from error, which tends to be avoided or buried.

The most neglected aspect of ourselves as problem is behaviour and attitudes. Thirty years ago (mea culpa) we would have blamed the behaviour and attitudes of conservative, ignorant farmers. Now the spotlight has been reversed. We have blamed them but the faults have often been ours. The sharpest finding of the experience of the past three years with participatory rural appraisal (PRA) is that in the TOT mode, by "holding the stick", "wagging the finger", and lecturing, outsider professionals have inhibited farmers from expressing themselves freely, and from revealing their analytical ability. Only when we sit down, listen, show respect, facilitate, listen and learn, can we understand farmers' priorities and their needs.

The combination of these factors is formidable, and robustly buffered against change. Those trapped in such systems deserve understanding and sympathy. Yet change is vital if smallholders are to be served, and much change has occurred and is occurring.

Industrial, Green Revolution, and the Third Agriculture

The need for change can be understood in terms of contrasting types of agriculture in the world. The Brundtland Commission - the World Commission on Environment and Development - categorized types of agriculture into three broad classes: industrial agriculture consisting of large fields under monoculture, and plantations; green revolution agriculture, which was mainly irrigated on flat plains, much of this being in Asia; and a third agriculture which is complex, diverse and risk-prone (CDR), as practised by most resource-poor farmers in the world.

In industrial and green revolution agriculture production has in the past been increased through simplification and standardisation in a TOT mode. This can be called a "Model T" approach to agriculture, after the remark attributed to Henry Ford concerning his famous first mass-produced popular car: "The American public can have their Model T any colour they like as long as it's black". Standard packages can work when there is a standard receiving environment controlled within narrow tolerances, like an animal or human body. Animal and human immunisation programmes are an example. Simplified and standardised packages of technology have also had successes with both industrial and green revolution agriculture, where the environment, E, is made to fit the genotype, G. Examples are high input irrigated conditions for crops, or the specially protected conditions often needed for the introduction of exotic livestock.

These conditions contrast with the third, complex, diverse and risk-prone (CDR), agriculture of most of the rainfed tropics, where there are hills, swamps, undulating land, drought, risk of flooding, and other hazards. This includes much of Sub-Saharan Africa. Worldwide, this CDR agriculture, directly and indirectly, probably supports over 1.5 billion people. In conditions where population pressure is heavy on the land, farmers in CDR agriculture often complicate and diversify their farming and livelihood systems in order to raise production and reduce risk. Their consequent need for variety is not met by standardised packages. For them, E cannot be controlled to fit G. In stead of simplifying and standardising, farmers seek to complicate and diversify their farming systems, adding new enterprises and multiplying synergistic internal linkages. They require a

range of G - a basket of diverse choices - to enhance their ability to adapt to and exploit a varied and unpredictable E, and reliable services to reduce risk. So they often favour multi-purpose species, and multi-species animal husbandry, adding to and complicating their farm enterprises and their internal linkages, rather than specialising on a single single-purpose species.

Farmer First

Better to serve this third agriculture, there has been a flowering of approaches and methods complementary to TOT, with a variety of labels. These include farmer participatory research (FPR) (Farrington and Martin 1988, and Amanor 1989), participatory technology development (PTD) (ILEIA 1988; Haverkort et al 1990; Jiggins and de Zeeuw 1992), participatory rural appraisal (PRA) (RRA Notes, passim; Mascarenhas et al 1991; Chambers 1992), and farmer first itself. What labels are used matters little as long as it is clear what is meant. In this paper I am using "farmer first" inclusively, to cover a whole range of approaches and methods which reverse the normal, which start with farmers and their conditions rather than with scientists and theirs, and which embrace and express a new professionalism.

The contrast between the TOT and farmer-first (FF) modes is presented in figure 3.

Farmer-first approaches and methods entail reversals of the normal, putting first the knowledge, criteria, analysis and priorities of farmers. They require shifts of initiative, responsibility and discretion downwards in hierarchies, and especially to farmers themselves. Earlier investigations were extractive, with researchers collecting data and taking it away to process, as in much farming systems research. In a FF mode, investigation and analysis are conducted more by farmers themselves, but sharing their knowledge and insights with outsiders. Farmers' groups have come into prominence, and more and more design and conduct their own trials and evaluations (for agriculture generally see e.g. Ashby et al 1989; Norman et al 1989; Heinrich et al 1991, and for livestock in particular Knipscheer and Suradisastra 1986, Fernandez and Salvatierra 1989). Methods such as participatory mapping, analysis of aerial photographs, matrix scoring and ranking, flow and linkage diagramming, seasonal analysis, and trend and change diagramming have become not just means for farmers to inform outsiders, but methods for their own analysis, conducting in effect their own farming systems research (Chambers 1992b). Farmers using these methods have shown a greater capacity to observe, diagram and analyse than most outsiders have expected, and are also proving good facilitators for other farmers. These participatory approaches and methods are proving both popular and powerful, and are spreading especially but not only in Botswana, Kenya, India, Nepal, Sri Lanka and Vietnam, and taking different forms in different places. Methodologically, the word "revolution" increasingly looks justified.

Farmer first approaches and methods imply new roles for scientists and extensionists. Of course, scientists must and will continue their normal science, in laboratories and on research stations, in support. But in addition, through these participatory means, they are now better able to learn from and with farmers, and so to serve diverse and complex conditions and farming systems. They exploit farmers' comparative advantages in understanding of their farming systems, and their ability to observe continuously. They enable farmers to learn for themselves.

The new roles for outsider professionals include convenor for groups; catalyst and consultant to stimulate, support and advise; facilitator of farmers' own analysis; searcher and supplier for materials, principles and practices to meet farmers' needs, to solve farmers' problems, and for farmers to try; and tour operator to enable farmers to learn laterally from each other.

To achieve a farmer first orientation in existing large-scale and hierarchical field bureaucracies is a formidable task. A recent (October 1992) workshop sought to summarise and consolidate understanding to date, learning from experience gained since the original Farmer First workshop held in 1987. Much of the discussion was based on empirical case studies (IIED/IDS 1992 Volume 1). Three sets of concerns and conclusions can be summarised. There was recognition of the following:

* that there are many knowledge systems, with different strengths and validities, and that within a rural environment, different groups and individuals differ in their knowledge and the power it bestows. Of these knowledge systems, scientific knowledge is one, with its strengths and weaknesses, while rural people's knowledge systems (RPK) present many others (Scoones and Thompson 1992)

* that there are now many participatory methods, presenting a wide repertoire for field practitioners. Respectful and low key behaviour and attitudes on the part of outsiders (scientists, extensionists etc) are critical for their successful use (Cornwall, Guijt and Welbourne 1992)

* that institutional change is difficult but essential, and can be sought in many ways, especially through combinations of participatory methods, new learning environments, and institutional support (Pretty and Chambers 1992). Change has been fastest and most secure in NGOs, and NGOs have a major contribution to make (Bebbington and Farrington 1992, Farrington and Lewis forthcoming); and it is spreading to Government field organisations, agricultural research, and even universities.

For better services to smallholders in a farmer-first mode, support for reforms and improvements is needed at the higher levels in hierarchies. But for improvements to be effective and more lasting, effective demand exercised by farmers and by farmer organisations from below has a major part to play. Such organisations, though, are liable to represent only the better off farmers. This requires a continuous effort to empower the poorer and weaker, to help them meet in groups, to facilitate their analysis, and to meet their priorities. To some professionals, such an ideal will appear unrealistic. It may be, though, that the power and popularity of the new participatory approaches and methods will provide their own countervailing pulls and satisfactions, becoming one means for agricultural and livestock services to serve smallholders better.

Practical Implications

To meet the farmer-first challenge demands a new professionalism and new professionals. The practical implications are many. They are professional, methodological, institutional and personal (for institutional implications see also Chambers et al 1989 and IIED/IDS 1992). They include:

* to offset the biases of temperate climate science and technology versus tropical, of resource-rich farmers, herders and conditions versus resource-poor, of controlled conditions against uncontrolled, of high cost inputs against low cost, and (within limits) from market-orientation to food security orientation.

* to orient programmes and research to the priorities and needs of the resource-poorer, often women

* to distinguish needs for standardisation and control (e.g. with some aspects of immunisation) from needs for diversity and choice

* in field bureaucracies, to institutionalise and reward learning from and with resource-poor farmers and herders, and to reward field staff for responsive and effective service

* to adopt and disseminate participatory methods for appraisal, analysis, research and action, to facilitate learning from, with and by resource-poor farmers and herders

* in education and training, to embrace a new professionalism, modifying textbooks, training curricula, and teaching and learning styles to stress experiential learning, especially on-farm and in-field with farmers and herders

The Personal Challenge

These are personal challenges, and the personal dimension is the crux. Professional, methodological, and institutional change only takes places through the actions of individuals. One person in a powerful position can prevent change, inhibiting a whole organisation from the necessary shift towards decentralisation, democratic management, and diversity. Conversely, alliances of individuals, differently placed in different organisations, can combine as critical masses to support change. The extreme word "revolution" reflects the turn around that is needed. It is to be approached and achieved, though, not in a sudden convulsion but incrementally, through a multitude of personal commitments and choices, and through small steps and persistent pushes.

An encouraging recent development here is for scientists, and mid-career and senior staff and policy-makers, to spend time directly listening, looking and learning for themselves in the field. In Tanzania, such an exercise over less than a week in four representative villages is leading to a major revision of national policy on land tenure, informed by villagers' reality (Johansson and Hoben 1992). The almost explosive development of participatory methods for enabling farmers to conduct their own analysis and to share their knowledge with outsiders opens up even more promising opportunities for such forms of direct field learning. One family of these approaches, known as PRA (participatory rural appraisal) (IIED 1988-; Mascarenhas et al 1991; FTPN 1992; Chambers 1992a and b), is both powerful and popular. The opportunity now is for scientists and senior decision-makers to spend time in villages as facilitators of rural people's own analysis, learning from and with them in a manner which can be both fascinating and fun.

If this had been done in the past, massively expensive errors could have been avoided; if it is done in the future, the gains may be enormous. For it is one good way to ensure that it is not our reality and priorities that count, but those of the small farmers and herders whom we seek to serve.

Three Final Questions

The central issue is whether smallholder farmers are being empowered to handle things better themselves. The challenge is for us to stand down off our professional pedestals; to see whether through our efforts, it can be farmers and herders who gain, and especially the poorer and weaker among them; and to enable them to adapt and manage better in the uncertain and risk-prone environments in which they struggle for their livelihoods.

From this farmer-first perspective, then, there are three sets of questions for this conference.

First: whose reality counts?

What are the comparative advantages of farmers' and herders' knowledge and ours? Where do we know better, and where do they know better? Does the farmer's knowledge often not count enough? Are we too dominant? Do we impose our reality and knowledge on the reality and knowledge of farmers? Who chooses? Do we present the farmer with a fixed package or a basket of choices? Does she or he determine the range of choice, and then choose? Do we know how to learn from and with farmers, how to enhance their analysis, how to enable them better to express their priorities? Whose analysis, criteria, and priorities count?

Second: who gains and who loses?

Of traders, resource-rich farmers and herders, resource-poor farmers and herders, consumers, scientists and extensionists, who gains? And especially which farmers and herders? Who has access to services, and who does not? The better off? The poorer? Women? Men? Are there losers, and who are they? Through our contacts, are farmers made dependent and vulnerable, or are they empowered and become secure? Do they gain in competence and adaptability, becoming better able to manage? How can the poorer be better served?

Third: how can we change?

How can decentralisation, democratic management, and diversity be achieved? What institutional strategies will work? Is it through participatory approaches and methods, interactive learning environments, and institutional support (Pretty and Chambers 1992)? If so, where and how is it best to start and sustain change? Are our behaviour, attitudes and beliefs the key? Is it, in the end, only through individual personal change and commitment that a professional revolution can take place?

References

Amanor, Kojo, 1989, 340 Abstracts on Farmer Participatory Research, Agricultural Administration (R and E) Network Paper 5, ODI, London

Ashby, J.A. with C. Quiros and Y.M. Rivers, 1989, "Experiences with group techniques in Colombia", in Chambers, Pacey and Thrupp eds. Farmer First pp 127-132

Bebbington, A. and John Farrington, 1992, The Scope for NGO-Government Interactions in Agricultural Technology Development: An International Overview, Agricultural Administration (R and E) Network Paper 33, ODI, London

Bentley, Jeffery W. and Keith L. Andrews, 1991, "Pests, Peasants, and Publications: anthropological and Entomological Views of an Integrate Pest Management Program for Small-scale Honduran Farmers", Human Organization Vol 50 no 2 1991 pp 113-123

Chambers, Robert, 1983, Rural Development: putting the last first, Longman, Harlow, UK

Chambers, Robert, 1992a, Methods for Analysis by Farmers: the Professional Challenge, Paper to the 12th Annual Symposium of the Association for FSR/E, Michigan State University, September 13-18Annual Symposium

Chambers, Robert, 1992b, Rural Appraisal: Rapid, Relaxed and Participatory, Discussion Paper 311, Institute of Development Studies, University of Sussex, Brighton, UK, November

Chambers, Robert, Arnold Pacey, and Lori Ann Thrupp (eds), 1989, Farmer First: farmer innovation and agricultural research, Intermediate Technology Publications, London

Cornwall, Andrea, Irene Guijt and Alice Welbourn, 1992, "Acknowledging Process: Challenges for Agricultural Research and Extension Methodology", Overview Paper 2, Workshop Beyond Farmer First (IIED/IDS 1992)

Dolberg, Frands, 1982, Livestock Strategies in India, typescript, Institute of Political Science, University of Aarhus, Denmark

Farrington, John and Adrienne Martin, 1988, Farmer Participatory Research: a Review of Concepts and Recent Practice, Occasional Paper no 9, ODI, London

Farrington, John and D. Lewis (eds), forthcoming, Reluctant Partners? NGOs, the State and the Rural Poor in Asian Agricultural Change, Routledge, London

Fre, Zeremarian, 1992, Ethno-Veterinary Care and Animal Production in East Sudan and Eritrea: implications for animal health, participatory extension and future policy, Paper for Workshop Beyond Farmer First, (IIED/IDS 1992)

FTPN, 1992, Forests, Trees and People Newsletter No 14/15, February

Gill, Gerald J., 1991, "But how does it compare with the real data?", RRA Notes Number 14 pp 5-14, December

Haverkort, Bertus, J. van der Kamp and Ann Waters-Bayer, 1990, strengthening Farmers' Experiments: a reader with practical experiences and cases of experimenting farmers..and how outsiders support them, ILEIA, 3830 AB Leusden, Netherlands

Heinrich, G.M., F. Worman and C. Koketso, 1991, "Integrating FPR with conventional on-farm research programmes: an example from Botswana, Journal of Farming Systems Research and Extension, 2(2) pp 1-15

IIED/IDS, 1992, Beyond Farmer First: Rural People's Knowledge, Agricultural Research and Extension Practice Workshop, 27-29 October 1992, Papers Vols 1 and 2, International Institute for Environment and Development, 3 Endsleigh Street, London WC1H ODD

Jiggins, Janice and H de Zeeuw, 1992, "Participatory Technology Development in practice: process and methods", in Reijntjes, Haverkort and Waters-Bayer Farming for the Future pp 135-162

Johansson, Lars and Alan Hoben, 1992, "RRA's for land policy formulation in Tanzania", Forests, Trees and People Newsletter, 14/15 February pp 26-31

Knipscheer, H.C. and Kedi Suradisastra, 1986, "Farmer Participation in Indonesian Livestock Farming Systems by Regular Research Field Hearings (RRFH)", Agricultural Administration vol 22, pp 205-216

Lightfoot, Clive, Shelley Feldman and M. Zainul Abedin, 1991, Households, Agroecosystems and Rural Resources Management: a guidebook for broadening the concepts of gender and farming systems, Bangladesh Agricultural Research Institute and International Center for Living Aquatic Resources Management

Mascarenhas, James, Parmesh Shah, Sam Joseph, Ravi Jayakaran, John Devavaram, Vidya Ramachandran, Aloysius Fernandez, Robert Chambers and Jules N. Pretty, 1991, "Participatory Rural Appraisal", RRA Notes no 13, IIED, London

Norman, David, D. Baker, G. Heinrich, C. Jonas, S. Maskiara and P Worman, 1989, "Farmer groups for technology development: experiences from Botswana" in Chambers, Pacey and Thrupp eds Farmer First pp 136-146

Pretty, Jules and Robert Chambers, 1992, "Turning the New Leaf: New Professionalism, Institutions and Policies for Agriculture", Overview Paper 3, Workshop Beyond Farmer First (IIED/IDS 1992)

Ranjan, 1980, Animal Nutrition and Feeding Practices in India, cited in Dolberg 1982

Reijnjtes, C, Bertus Haverkort and Ann Waters-Bayer, 1992, Farming for the Future: an introduction to low-external input and sustainable agriculture, Macmillan and ILEIA, PO Box 64, NL-3830, AB Leusden, Netherlands

Scoones, Ian and John Thompson, 1992, "Beyond Farmer First: Rural People's Knowledge, Agricultural Research and Extension Practice: Towards a Theoretical Framework", Overview Paper 1, Workshop Beyond Farmer First (IIED/IDS 1992)

Starkey, Paul, 1988, Animal-Drawn Wheeled Toolcarriers: Perfected yet Rejected. A cautionary tale of development, Friedrich Vieweg & Sohn, Braunschweig/Wiesbaden

WHOSE KNOWLEDGE COUNTS?

	WE KNOW	WE DK
THEY KNOW	2=	4
THEY DK	1	2= ✓

ACCEPTABILITY TO US IN THE PAST

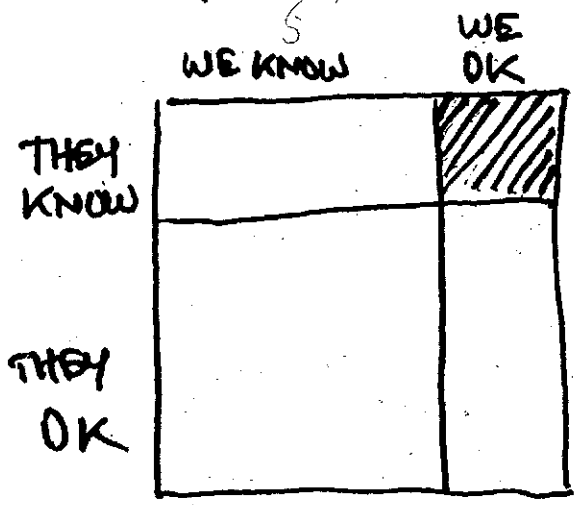
1 = MOST ACCEPTABLE

4 = LEAST ACCEPTABLE

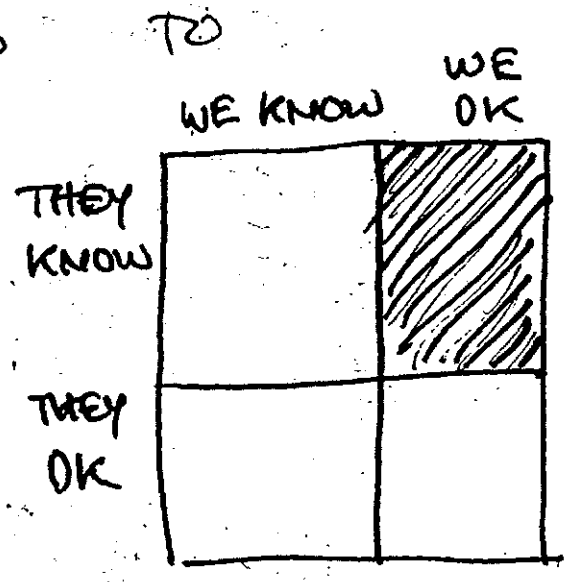
SHIFTS IN OUR PROFESSIONAL VIEWS

RELATIVE AMOUNT AND IMPORTANCE OF KNOWLEDGE

FROM



TO



Three types of agriculture summarized

	Industrial	*Green Revolution*	*Third/'CDR'*
Main locations	Industrialized countries and specialized enclaves in the Third World	Irrigated and stable rainfall, high potential areas in the Third World	Rainfed areas, hinterlands, most of sub-Saharan Africa, etc
Main climatic zone	Temperate	Tropical	Tropical
Major type of farmer	Highly capitalized family farms and plantations	Large and small farmers	Small and poor farm households
Use of purchased inputs	Very high	High	Low
Farming system, relatively	Simple	Simple	Complex
Environmental diversity, relatively	Uniform	Uniform	Diverse
Production stability	Moderate risk	Moderate risk	High risk
Current production as percentage of sustainable production	Far too high	Near the limit	Low
Priority for production	Reduce production	Maintain production	Raise production

CDR: complex, diverse and risk-prone

Transfer-of-Technology and Farmer-First Compared

	TOT	FF
Main objective	Transfer technology	Empower farmers
Analysis of needs and priorities by	Outsiders	Farmers assisted by outsiders
Transferred by outsiders to farmers	Precepts	Principles
	Messages	Methods
	Package of practices	Basket of choices
The "menu"	Fixed	A la carte
Farmers' behavior	Hear messages	Use methods
	Act on precepts	Apply principles
	Adopt, adapt or reject package	Choose from basket and experiment
Outsiders' desired outcomes emphasize	Widespread adoption of package	Wider choices for farmers
		Farmers' enhanced adaptability
Main mode of extension	Agent-to-farmer	Farmer-to-farmer
Roles of extension agent	Teacher	Facilitator
	Trainer	Searcher for and provider of choice

1992

Farmer First: The Professional Revolution

Robert Chambers
Institute of Development Studies, University of Sussex, United Kingdom

The Context of Rapid Change

We live in a period of rapid, often accelerating, change. This applies not only to ecological, social and economic conditions, but also more pointedly to professionalism. Shifts are taking place in all the major professions concerned with rural development. This is exciting, even exhilarating. But for all of us, there is also a sense in which we are threatened and suffer, because so often the professional training we have received and the top-down bureaucratic norms by which we operate prove to be handicaps. At training college and university we thought we were being taught approaches and methods which would last us for life. But now we find not just knowledge changing, but also professional norms, methods and roles. So scientists in agriculture, animal husbandry and veterinary services are now called upon to do things they were not originally trained to do. This makes the challenge, and the opportunity, not just professional, but also personal, applying to all of us - to unlearn old beliefs, attitudes, behaviours and methods, to learn new ones, and continuously to adapt to change.

Past Error

It is striking, and humbling, how often in the past we have been wrong while so sure we were right: the errors have been in policy, practice and beliefs, and in both the social and natural sciences; and second, how often the provision of services has failed the poorer and weaker among farmers and herders.

Although much has been achieved, the history of development presents a sobering catalogue of errors, of mistaken belief and action. In agriculture, one has been the widespread conviction, still repeated, that post-harvest losses of grain at the village level are of the order of 30%, when again and again when careful research has been conducted, the losses have been found to be only of the order of 4% to 8%. Much agricultural research has been misplaced: an illustration (pers. comm. David Lyon) is 10 years' research in northern Nigeria based on planting cotton at the time optimal for yields - the start of the rains, when farmers would only plant later, when they had put in their food crops. Another error has been our ignorant advocacy of heavy pesticide applications, compared with the more sensitive, cheaper and effective approaches of integrated pest management which are reported to be so successful now in Indonesia and elsewhere. There is no shortage of examples.

Concerning livestock, the tragic history of misguided grazing and ranching schemes and projects in Sub-Saharan Africa stands out as remarkable for its scale and sustainability, with the imposition of inappropriate management systems from outside, in contrast with the more sensitive and flexible indigenous practice.

Livestock-related technology provides another revealing case in the form of animal-drawn wheeled toolcarriers in Africa, Asia and Latin America. Starkey (1988) reported that about 10,000 wheeled toolcarriers of over 45 different designs had been made, but their use by farmers had been negligible. Farmer rejection had been apparent since the early 1960s, "yet as recently as 1986 the majority of researchers, agriculturalists, planners and decision makers in national programmes, aid agencies and international centres were under the impression that wheeled toolcarriers were a highly successful technology". He concludes that "The wheeled toolcarrier story is remarkable, for the implements have been universally "successful" yet never adopted by farmers." Farmers rejected them because of high cost, heavy weight, lack of manoeuvrability, inconvenience in operation, complication of adjustment, and difficulty in changing between modes. What worked in the privileged and special conditions of the research station, according to the criteria of scientists and engineers, did not work in actual farming conditions, according to the criteria of farmers. The astonishing and sobering aspect of this tragic story of wasted resources and talent is "our" sustained failure to recognise and embrace error, our failure to listen to and learn from farmers. More generally, only a small proportion of agricultural research leads to technology which is adopted by farmers. There is something to be

To achieve balance, though, is not easy. The power and dominance of "our" knowledge systems are so great, that to take farmers' knowledge seriously enough requires a massive reversal.

Beyond technical knowledge, the farmer is the expert on what she or he wants. If technology and services are to fit and serve well, it is farmers' priorities and conditions which have to come first; but all too often it is the priorities and conditions of outsider professionals that dominate and determine what is done.

With hindsight, past neglect of farmers' reality and priorities, as with the wheeled toolbars, can appear astoundingly arrogant and stupid. But past professionals deserve sympathetic understanding of how this came about; and understanding the reasons helps in the search for what should and could be done.

The Normal and the Transfer of Technology

Much of the explanation can be found in professional biases and specialisation, in normal professionalism and bureaucracy, and in behaviour and attitudes.

Professional biases are many. In the context of this Conference, they include preferences for animals which are large, exotic, capital-intensive, kept by the wealthier, linked to the wider market (through both inputs and outputs), well researched, and prominent in textbooks and courses. (In a classic example, Dolberg observes that in the undergraduate textbook *Animal Nutrition and Feeding Practices* in India (Ranjan 1980) only one and a half of the 322 pages are devoted to working animals, and half that space is given to horses which are only 1% of the working animals in India (Dolberg 1982). Much of this may have been corrected, but the obvious point has to be made that for poor rural people, it is often precisely the less prestigious small stock (goats, sheep, the much neglected donkey, hens, ducks, rabbits, guinea pigs, bees...) that are vital, to hedge against risk, reduce vulnerability, and provide savings, reserves to meet contingencies, and incomes and small change for transactions.

Specialization and reductionism

Professional biases are reinforced by *specialisation and reductionism*. Specialisation in education and training is reinforced by specialisation in government departments. After education and training in Faculties of Veterinary Medicine or Animal Science, young professionals pass on into Departments of Veterinary Services or Animal Husbandry. For all of us, on visiting a farm, our focus of attention, the first thing we look at, is what concerns our particular discipline or department. We look for and see a part, not the whole. What we tend to miss are precisely the many linkages within the farming system which the farmer manages (Lightfoot, Feldman and Abedin 1991), on which she or he is the expert, and which each specialisation undervalues. Crops are the concern of agronomists concerned primarily with grain yield; significantly, the contribution of crops to livestock is described by agronomists as crop "residues", as, in their view, left-overs; but in many farming systems the "left-over" is vital fodder, sometimes valued more than the grain. Animals are the concern of veterinary scientists and animal husbandry extensionists, who may also specialise and concentrate only on one species. It is the animal itself, not its linkages with other parts of the farming system, still less the whole farming system, still less the whole livelihood system of the farm family, that is the focus of attention. Yet in complex, diverse and risk-prone conditions, in order to achieve a sustainable agriculture, farmers often try to multiply, diversify and strengthen precisely these complicating internal linkages where our knowledge is weak and theirs is strong.

Normal professionalism is the dominant concepts, values, methods and behaviour in professions, and includes and sustains these biases and this specialisation. Normal professionalism is inculcated and taught in training institutes, colleges and universities, reinforced by bureaucracies and professional associations, and sustained by appointments boards and journal editors and their referees. Normal professionalism has awarded higher status to work in controlled conditions than in uncontrolled, and on research stations than with farmers. It is reductionist in its methods, and simplifies, controls and standardises.

The normal professionalism of agriculture can be seen to operate in a transfer-of-technology (TOT) mode of research and extension. In this mode, scientists determine research priorities, conduct research in laboratories and on research stations, generate packages of technology which are successful according to their criteria, and then hand these over to Extension to transfer to farmers.

Normal bureaucracy takes over at this point. Normal bureaucracy is hierarchical, with authority

explained; and to explain it we have to examine ourselves, our knowledge, environment, aims and methods, and smallholders and theirs.

Concerning contact and services, other pervasive error, across all disciplines and departments, has been the relative neglect of the poorer, more marginal and more remote farmers and herders (Chambers 1983). It is notorious that extension staff tend to have contact with and serve the larger, better off and more accessible farm families. Extension staff then overperceive those who adopt recommended technology, and underperceive those who do not: in Western Kenya in a random sample of farmers there was only a 50% chance of finding an exotic grade cow, but a junior agricultural extension worker complained that his sample was biased because he did not find several. The better off farmers are more able to reciprocate for services rendered, with everything from cups of tea to political patronage and willingness to receive and impress important official visitors. At the extreme (pers. comm. David Leonard) the better off farmers receive veterinary services free, while the poorer have to pay.

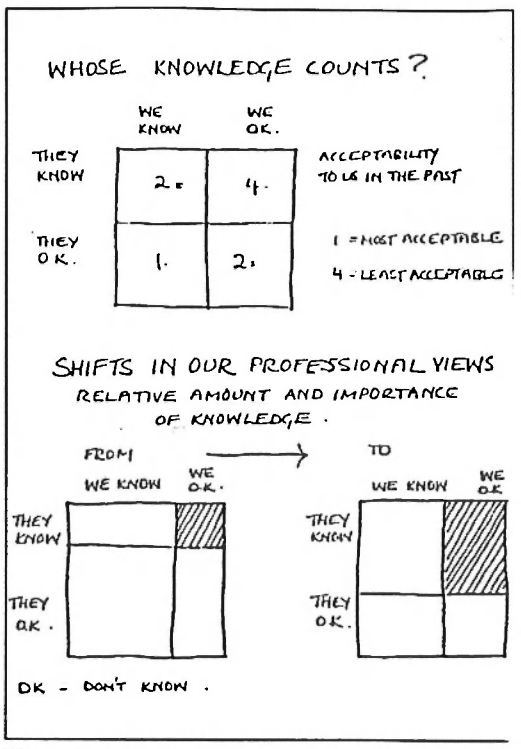


Figure 1

Whose Knowledge Counts?

Recognition of such shortcomings raises questions of how to avoid error. If we, as scientists, look at ourselves, we will admit that the most acceptable position for us - the best for our egos and self-esteem - is that - we know, and farmers do not know. Where farmers and scientists both know, and where they both do not know, we are on a more or less equal footing (although quite often we pretend we know when we do not know). The least acceptable position to us has in the past been that farmers know and we do not know. And yet that is often the most crucial.

In the past we thought that there was a lot that scientists knew and farmers did not, and there was a bit that both knew, but there was not much that farmers knew which we did not. With growing wisdom, particularly through work with resource-poor farmers over the past 10 years, our professional consciousness has become more balanced. We recognise now that farmers know a great deal that we do not know, and that this knowledge is linked with practical management of the farming system.

Scientists' comparative competence and knowledge vis-a-vis farmers usually includes:

- minute and microscopic phenomena
- biotechnology
- processes where specialisation, reductionism and precision work well
- developing package technology for uniform and controlled conditions
- access to knowledge and genetic material from other environments

Farmers' comparative competence and knowledge vis-a-vis scientists usually includes:

- the experience and discipline of having to live in and survive through managing an actual farming and livelihood system
- continuous observation of visible processes
- the creation and exploitation of diverse microenvironments
- freedom to make progressive changes, managing and adapting sequences, unrestricted by rigid experimental design
- a long time horizon where rights to resources are secure
- development, adaptation and knowledge of technology for diverse local conditions including internal linkages

A balance is needed. As Jeffery Bentley has written:

"Anthropologists and sensitized agricultural scientists need to avoid romanticizing or sentimentalizing traditional farmers at the same time as they take their knowledge and opinions seriously"

Commission on Environment and Development - categorized types of agriculture into three broad classes: industrial agriculture consisting of large fields under monoculture, and plantations; green revolution agriculture, which is mainly irrigated on flat plains, much of this in Asia; and a third agriculture which is complex, diverse and risk-prone (CDR), as practised by most resource-poor farmers in the world.

In industrial and green revolution agriculture production has in the past been increased through simplification and standardisation in a TOT mode. This can be called a "Model T" approach to agriculture, after the remark attributed to Henry Ford concerning his famous first mass-produced popular car: "The American public can have their Model T any colour they like as long as it's black". Standard packages can work when there is a standard receiving environment controlled within narrow tolerances, like an animal or human body. Animal and human immunisation programmes are an example. Simplified and standardised packages of technology have also had successes with both industrial and green revolution agriculture, where the environment, E, is made to fit the genotype, G. Examples are high input irrigated conditions for crops, or the specially protected conditions often needed for the introduction of exotic livestock.

These conditions contrast with the third, complex, diverse and risk-prone (CDR), agriculture of most of the rainfed tropics, where there are hills, swamps, undulating land, drought, risk of flooding, and other hazards. This includes much of Sub-Saharan Africa. Worldwide, this CDR agriculture, directly and indirectly, probably supports over 1.5 billion people. In conditions where population pressure is heavy on the land, farmers in CDR agriculture often complicate and diversify their farming and livelihood systems in order to raise production and reduce risk. Their consequent need for variety is not met by standardised packages. Instead of simplifying and standardising, farmers seek to complicate and diversify their farming systems, adding new enterprises and multiplying synergistic internal linkages. They require a basket of diverse choices - to enhance their ability to adapt to and exploit a varied and unpredictable ecosystem, and reliable services to reduce risk. So they often favour multi-purpose species, and multi-species animal husbandry, adding to and complicating their farm enterprises and their internal linkages, rather than specialising on a single single-purpose species.

Farmer First

Better to serve this third agriculture, there has been a flowering of approaches and methods complementary to TOT, with a variety of labels. These include farmer participatory research (FPR) (Farrington and Martin 1988, and Amanor 1989), participatory technology development (PTD) (del. ref., Haverkort et al 1990, Jiggins and de Zeeuw 1992), participatory rural appraisal (PRA) (*RRA Notes, passim*; Mascarenhas et al 1991, Chambers 1992a and b), and farmer first itself. What labels are used matters little as long as it is clear what is meant. In this paper I am using "farmer first" inclusively, to cover the whole range of approaches and methods which reverse the normal, which start with farmers and their conditions rather than with scientists and theirs, and which embrace and express a new professionalism.

Farmer-first approaches and methods entail reversals of the normal, putting first the knowledge, criteria, analysis and priorities of farmers.

They require shifts of initiative, responsibility and discretion downwards in hierarchies, and especially to farmers themselves.

Figure 3. Transfer of technology and farmer-first compared.

	TOT	FF
Main objectives	Tranfer technology	Empower farmers
Analysis of needs and priorities by	Outsiders	Farmers assisted by outsiders
Transferred by outsiders to farmers	Precepts Messages Package of practices	Principles Methods Basket of choices
The 'menu'	Fixed	A la carte
Farmers' behaviour	Act on precepts Adopt, adapt or reject package	Apply principles, use methods, choose from basket, experiment
Outsiders' desired outcomes emphasize	Widespread adoption of package	Wider choices for farmers Farmers' enhanced adaptability
Main mode of extension	Agent-to-farmer	Farmer-to-farmer
Roles of extension agent	Teacher Trainer	Facilitator, searcher for and provider of choice

and power concentrated at the top, with headquarters located in central places, often capital cities. It tends to centralise and standardise. So in the TOT mode, extension recommendations are determined centrally, and then passed down the system as standard packages for Extension. Subsidies may be used to induce "adoption". It is the larger and better off farmers and herders who are contacted, and men rather than women. No one is rewarded if farmers reject technology, and bad news is slow to pass back up the system. Error tends to be hidden and denied, so that normal bureaucracy is not good at learning from failures.

Behaviour and attitudes

These are all aspects of ourselves as part of the problem. Increasingly they are recognised. But there remains one much neglected aspect of ourselves - *behaviour and attitudes*. Thirty years ago (*mea culpa*) we would have blamed the behaviour and attitudes of conservative, ignorant farmers. Now the spotlight has been reversed. We have blamed them but the faults have often been ours. The sharpest finding of the experience of the past three years with participatory rural appraisal (PRA) is that in the TOT mode, by "holding the stick", "wagging the finger", and lecturing, outsider professionals have inhibited farmers from expressing themselves freely, and from revealing their analytical ability. Only when we sit down, listen, show respect, facilitate, listen and learn, can we understand farmers' priorities and their needs. The combination of these factors is formidable, and robustly buffered against change. Those trapped in such systems deserve understanding and sympathy. Yet change is vital if smallholders are to be served, and much change has occurred and is occurring.

The Sequence of Professional Change

The extent of change that has already taken place is indicated by the quite dramatic contrasts of professional perceptions of reasons for non-adoption of extension recommendations over past decades. In the 1950s and 1960s, the dominant explanation of non-adoption by farmers was their ignorance. Extensionists, teachers and social scientists assumed that the technology was good. The main social science research questions were - who adopts, and who does not? why are some people early adopters and some laggards?

Then, in the 1970s and 1980s, agricultural professionals increasingly recognised the significance of farm-level constraints. The solution was then to identify and remove the constraints, to

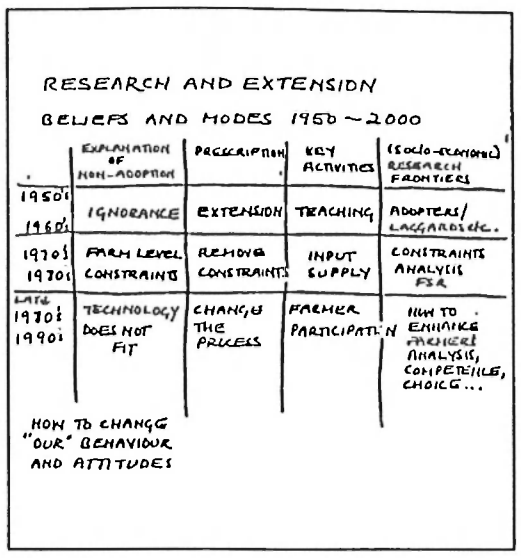


Figure 2

try to make the farm more like the research station, to make the environment fit the genotype. This was the green revolution approach. This led to much field research including constraints analysis, pioneered and propagated by the International Rice Research Institute. This aimed to identify why farmers were getting lower yields than the research station, and the relative importance of different factors in explaining the shortfall.

In the meantime, farming systems research (FSR) made a major contribution to understanding the complexity, diversity and riskiness of many farming systems, and how these explained non-adoption. But FSR sometimes became ponderous, and lost some donor support, notably from USAID. In approach and methods, we are now moving beyond FSR to ask: who collects and analyses data, the scientist or the farmer? In the 1990s we are now aware that it is not the farmer, or farm-level constraints, which may be at fault, but the processes which generate the technology. If farmers do not adopt, it may be because they are intelligent and sensible, not because they are stupid and ignorant. We have then to change the process that generates the technology. The key activity becomes not input supply but farmer participation.

Industrial, Green Revolution, and CDR Agriculture

The rationale for change can be understood in terms of contrasting types of agriculture in the world. The Brundtland Commission - the World

practical implications are many. They are professional, methodological, institutional and personal (for institutional implications see also Chambers et al 1989 and IIED/IDS 1992). They include:

- to offset biases - of temperate climate science and technology versus tropical; of resource-rich farmers, herders and conditions versus resource-poor; of controlled conditions against uncontrolled; of high cost inputs against low cost; and (within limits) of market-orientation versus food security orientation.
- to orient programmes and research to the priorities and needs of the resource-poorer, often women
- to decentralise discretion and allow and encourage diversity in programmes, in order to serve local needs and conditions
- in field bureaucracies, to reward learning from and with resource-poor farmers and herders, and to reward field staff for responsive and effective service
- to adopt and disseminate participatory methods for appraisal, analysis, research and action, to facilitate learning from, with and by resource-poor farmers and herders
- in education and training, to embrace a new professionalism, and to modify textbooks, training curricula, and teaching and learning styles to stress experiential learning, especially on-farm and in-field with farmers and herders

The Personal Challenge

These are personal challenges, and the personal dimension is the crux. Professional, methodological, and institutional change only takes places through the actions of individuals. One person in a powerful position can prevent change, inhibiting a whole organisation from the necessary shift towards decentralisation, participatory management, and diversity. Conversely, alliances of individuals, differently placed in different organisations, can combine as critical masses to support change. The extreme word "revolution" reflects the turn around that is needed. It is to be approached and achieved, though, not in a sudden convulsion but incrementally, through a multitude of personal commitments and choices, and through innumerable small as well as large steps and persistent pushes.

An encouraging recent development here is for scientists, and mid-career and senior staff and policy-makers, to spend time directly listening, looking and learning for themselves in the field. In Tanzania, such an exercise over less than a week in four representative villages is leading to a major revision of national policy on land tenure, informed by villagers' reality (Johansson and Hoben 1992). The almost explosive development of participatory methods for enabling farmers to conduct their own analysis and to share their knowledge with outsiders opens up even more promising opportunities for such forms of direct field learning. The family of these approaches known as PRA (participatory rural appraisal) (IIED 1988-, Mascarenhas et al 1991, FTPN 1992, Chambers 1992a and b), is proving both powerful and popular. The opportunity now is for scientists and senior decision-makers to spend time in villages as facilitators of rural people's own analysis, learning from and with them in a manner which can be both fascinating and fun.

If this had been done in the past, massively expensive errors such as those mentioned at the start of this paper might have been avoided; if it is done in the future, the gains may be enormous. For it is one good way to ensure that it is not our reality and priorities that count, imposed from above, but those of the small farmers and herders whom we seek to serve, articulated from below.

Three Final Questions

The central issue is whether smallholder farmers and herders are being empowered to handle things better themselves. The challenge is for us to stand down from our professional pedestals; to see whether through our efforts, it can be farmers and herders who gain, and especially the poorer and weaker among them; and to enable them to adapt and manage better in the uncertain and risk-prone environments in which they struggle for their livelihoods.

From this farmer-first perspective, then, there are three sets of questions for this conference.

First: **whose reality counts?**

What are the comparative advantages of farmers' and herders' knowledge and ours? Where do we know better, and where do they know better? Does the farmer's knowledge often not count enough? Are we too dominant? Do we impose our reality and knowledge on the reality and knowledge of farmers? Who chooses? Do we present the farmer with a fixed package or a basket of choices? Does she or he determine the range of choice, and then choose? Do we know how to learn from and with farmers, how to enhance their analysis, how to enable them better to express their priorities? *Whose analysis, criteria, and priorities count?*

Earlier investigations were extractive, with researchers collecting data and taking it away to process, as in much farming systems research. In a FF mode, investigation and analysis are conducted more by farmers themselves, at the same time sharing their knowledge and insights with outsiders. Farmers' groups have come into prominence, and more and more design and conduct their own trials and evaluations (for agriculture generally see Ashby et al 1989, Norman et al 1989, Heinrich et al 1991, and for livestock in particular Knipscheer and Suradisastra 1986). Methods such as participatory mapping, analysis of aerial photographs, matrix scoring and ranking, flow and linkage diagramming, seasonal analysis, and trend and change diagramming are becoming means for their own analysis, conducting in effect their own farming systems research (Chambers 1992b). These methods capitalise on farmers' comparative advantages in understanding their farming systems, and their ability to observe continuously. They enable farmers to learn for themselves. Farmers using these methods have shown a greater capacity to observe, diagram and analyse than most outsiders have expected, and are also proving good facilitators for other farmers.

These participatory approaches and methods are proving both popular and powerful, and are spreading especially, but not only, in Botswana, Kenya, India, Nepal, Sri Lanka and Vietnam, and taking different forms in different places. They complement those already known, but the reversals they entail and the speed of their spread more and more seem to justify the word "revolution".

Farmer-first approaches and methods imply new roles for scientists and extensionists. Of course, scientists must and will continue their normal science, in laboratories and on research stations, in support. But in addition, through these participatory means, they are now better able to learn from and with farmers, and so to serve diverse and complex conditions and farming systems. The new roles for outsider professionals include *convenor* for groups; *catalyst and consultant* to stimulate, support and advise; facilitator of farmers' own analysis; *searcher and supplier* for materials, principles and practices to meet farmers' needs, to solve farmers' problems, and for farmers to try; and *tour operator* to enable farmers to learn laterally from each other.

To achieve a farmer first orientation in existing large-scale and hierarchical field bureaucracies is a formidable task. A recent (October 1992) workshop sought to summarise and consolidate understanding to date, learning from experience gained since the original Farmer First workshop held in 1987. Much of the discussion was based on empirical case studies (IIED/IDS 1992 Volume 1). Three sets of concerns and conclusions can be summarised. There was recognition of the following:

- that there are many knowledge systems, with different strengths and validities, and that within a rural environment, different groups and individuals differ in their knowledge and the power it bestows. Of these knowledge systems, scientific knowledge is one, with its strengths and weaknesses, while rural people's knowledge systems (RPK) present many others (Scoones and Thompson 1992)
- that there are now many participatory methods, presenting a wide repertoire for field practitioners. Respectful and low key behaviour and attitudes on the part of outsiders (scientists, extensionists) are critical for their successful use (Cornwall, Guijt and Welbourne 1992)
- that institutional change is difficult but essential, and can be sought in many ways, especially through combinations of participatory methods, new learning environments, and institutional support (Pretty and Chambers 1992). Change has been fastest and most secure in NGOs, and NGOs have a major contribution to make (Bebbington and Farrington 1992, Farrington and Lewis forthcoming); and it is spreading to Government field organisations, agricultural research, and even universities.

For better services to smallholders in a farmer-first mode, support for reforms and improvements is needed at the higher levels in hierarchies, and also in the middle levels. But for improvements to be effective and more lasting, effective demand exercised by farmers and by farmer organisations from below has a major part to play. Such organisations, though, are liable to represent only the better-off farmers. This requires a continuous effort to empower the poorer and weaker, to help them meet in groups, to facilitate their analysis, and to meet their priorities. To some professionals, such an ideal will appear unrealistic. It may be, though, that the power and popularity of the new participatory approaches and methods will provide their own countervailing pulls and satisfactions, becoming one means for agricultural and livestock services to serve smallholders better.

Practical Implications

To meet the farmer-first challenge demands a new professionalism and new professionals. The

technology development: experiences from Botswana" in Chambers, Pacey and Thrupp eds Farmer First pp 136-146

Pretty, J. and Chambers, R. 1992. "Turning the new leaf: New professionalism, institutions and policies for Agriculture", Overview Paper 3, Workshop Beyond Farmer First (IIED/IDS 1992)

Ranjan, 1980. Animal nutrition and feeding practices in India, cited in Dolberg 1982

Reijnjtes, C, Haverkort, B. and Waters-Bayer, A. 1992. "Farming for the Future: an introduction to low-external input and sustainable agriculture", Macmillan and ILEIA, PO Box 64, NL-3830, AB Leusden, Netherlands

Scoones, I. and Thompson, J. 1992 "Beyond farmer first: rural people's knowledge, agricultural research and extension practice: towards a theoretical framework", Overview Paper 1, Workshop Beyond Farmer First (IIED/IDS 1992)

Starkey, P. 1988 "Animal-drawn wheeled toolcarriers: perfected yet rejected". A cautionary tale of development, Friedrich Vieweg and Sohn, Braunschweig/Wiesbaden

Second: **who gains and who loses?**

Of traders, resource-rich farmers and herders, resource-poor farmers and herders, consumers, scientists and extensionists, who gains? And especially which farmers and herders? Who has access to services, and who does not? The better off? The poorer? Women? Men? Are there losers, and who are they? Through our contacts, are farmers made dependent and vulnerable, or are they empowered and become secure? Do they gain in competence and adaptability, becoming better able to manage? *How can the poorer be better served?*

Third: **how can we change?**

How can decentralisation, democratic management, and diversity be achieved? What institutional strategies will work? Is it through participatory approaches and methods, interactive learning environments, and institutional support (Pretty and Chambers 1992)? If so, where and how is it best to start and sustain change? Are our behaviour, attitudes and beliefs the key? *Is it, in the end, only through individual personal change and commitment that a professional revolution can take place?*

References

Amanor, K. 1989. "340 Abstracts on Farmer Participatory Research". Agricultural Administration (R and E) Network Paper 5, ODI, London

Ashby, J.A. with Quiros, C. and Rivers, Y.M. 1989. "Experiences with group techniques in Colombia", in Chambers, Pacey and Thrupp eds. Farmer First pp 127-132

Bebbington, A. and Farrington, J. 1992. "The scope for NGO-Government interactions in agricultural technology Development: An International Overview", Agricultural Administration (R and E) Network Paper 33, ODI, London

Bentley, J.W. and Andrews, K.L. 1991. "Pests, peasants, and publications: Anthropological and entomological views of an integrated pest management program for small-scale Honduran farmers", Human Organization Vol 50 no 2 1991 pp 113-123

Chambers, R. 1983. "Rural Development: putting the last first", Longman, Harlow, UK

Chambers, Robert. 1992a. "Methods for analysis by farmers: the Professional challenge", Paper to the 12th Annual Symposium of the Association for FSR/E, Michigan State University, September 13-18 Annual Sy

Chambers, R. 1992b. "Rural appraisal: rapid, relaxed and participatory", Discussion Paper 311, Institute of Development Studies, University of Sussex, Brighton, UK, November

Chambers, R., Pacey, A. and Thrupp, L.A. eds 1989. "Farmer first: farmer innovation and agricultural research", Intermediate Technology Publications, London

Cornwall, A., Guijt, I and Welbourne, A. 1992. "Acknowledging process: challenges for agricultural research and extension methodology", Overview Paper 2, Workshop Beyond Farmer First (IIED/IDS 1992)

Dolberg, F. 1982. "Livestock strategies in India", typescript, Institute of Political Science, University of Aarhus, Denmark

Farrington, J. and Martin, a. 1988. "Farmer participatory research: a Review of concepts and recent practice", Occasional Paper no 9, ODI, London

Farrington, J. and Lewis, D. eds (forthcoming) "Reluctant partners? NGOs, the State and the Rural Poor in Asian Agricultural Change", Routledge, London

Fre, Z. 1992. "Ethno-veterinary care and animal production in East Sudan and Eritrea: implications for animal health, participatory extension and future policy", Paper for Workshop Beyond Farmer First, (IIED/IDS 1992)

FTPN 1992. "Forests, Trees and People Newsletter" No 14/15, February

Haverkort, B., van der Kamp, J. and Waters-Bayer, A. 1990. "Strengthening farmers' experiments: a reader with practical experiences and cases of experimenting farmers..and how outsiders support them", ILEIA, 3830 AB Leusden, Netherlands

Heinrich, G.M., Worman, F. and Koketso, C. 1991. "Integrating FPR with conventional on-farm research programmes: an example from Botswana, Journal of Farming Systems Research and Extension, 2(2) pp 1-15

IIED/IDS. 1992. "Beyond farmer first: Rural people's knowledge", Agricultural Research and Extension Practice Workshop, 27-29 October 1992, Papers Vols 1 and 2, International Institute for Environment and Development, 3 Endsleigh Street, London WC1H ODD

Jiggins, J. and de Zeeuw, H. 1992. "Participatory technology development in practice: process and methods", in Reijntjes, Haverkort and Waters-Bayer Farming for the Future pp 135-162

Johansson, L. and Hoben, A. 1992. "RRA's for land policy formulation in Tanzania", Forests, Trees and People Newsletter, 14/15 February pp 26-31

Knipscheer, H.C. and Suradisastra, K. 1986. "Farmer participation in Indonesian livestock farming systems by regular research field hearings (RRFH)", Agricultural Administration vol 22, pp 205-216

Lightfoot, C., Feldman, S. and Abedin, M.Z. 1991. "Households, agroecosystems and rural resources management: a guidebook for broadening the concepts of gender and farming systems", Bangladesh Agricultural Research Institute and International Center for Living Aquatic Resources Management

Mascarenhas, J., Shah, P., Ravi Jayakaran, S.J., Devavaram, J., Ramachandran, V., Fernandez, A., Chambers, R. and Pretty, J.N. 1991. "Participatory Rural Appraisal", RRA Notes no 13, IIED, London

Norman, D., Baker, D., Heinrich, G., Jonas, C., Maskiara, S. and Worman, P. 1989. "Farmer groups for